



## Wastewater Study

# PRELIMINARY BASIS OF DESIGN for WASTEWATER MUSEUM SQUARE

## PRELIMINARY Basis of Design Report

☐ ACCEPTED

☒ ACCEPTED AS NOTED

☐ REVISE AND RESUBMIT



Disclaimer: If accepted; the preliminary approval is granted under the condition that a final basis of design report will also be submitted for city review and approval (typically during the DR or PP case). The final report shall incorporate further water or sewer design and analysis requirements as defined in the city design standards and policy manual and address those items noted in the preliminary review comments (both separate and included herein). The final report shall be submitted and approved prior to the plan review submission.

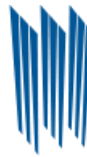
For questions or clarifications contact the Water Resources Planning and Engineering Department at 480-312-5685.

BY Idillon

DATE 11/14/2018

2<sup>nd</sup> Steet and Marshall Way  
Scottsdale, AZ

Prepared For:



MACDONALD  
DEVELOPMENT CORPORATION

3225 N. Central Avenue, Suite 100  
Phoenix, AZ 85012

Comments throughout.  
See next page for  
highlights.

Prepared by:



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Project Number: 180109



EXPIRES 12-31-19

This is review Round 3



Submittal Date: June 15, 2018  
Revision Date: September 25, 2018

Case No.: 391-PA-2018; 13-ZN-2018

Plan Check No.: TBD

**LDillon comments 11/14/2018**

New 10"/8" parallel sewer servicing Canopy Hotel and Museum Square hotel and condos is proposed herein. Coordination with Canopy is required as Canopy is further along.



If a parallel sewer is not able to be constructed then upsizing of the existing sewer shall be required. Upsized sewer shall convey 813gpm/453gpm at max  $d/D=0.65$ . Given the slope of the existing 8" sewer this would be a 12-inch min sewer from 2nd Street north to Museum Square Hotel/condo tie-in to convey 813gpm, then a 10-inch min sewer north to alley north of 1st street to convey 453gpm.

Note that only 4.5ft of wall to wall separation from new to existing sewer is shown on the utility plan herein. Minimum separation is 6 feet. Refer to utility plan comments.

-----  
Private sewer shall conform to Scottsdale adopted plumbing code.

Per Section 5.1 herein: "South of 2nd Street - three residential buildings will be constructed over a common underground garage and operate as a single structure located on a single lot under management of a property agreement. Sewer service will be routed through a privately owned, operated and maintained sewer line from each high-rise down through the garage and over to Marshall Way"

Note that garage limits are not clear on utility plan herein. Several sections of pipe appears to leave building envelope and reenter another building. This is not allowed per plumbing code. Clarify/correct as needed on submitted plans.

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Designer shall confirm all sewer diameters,inverts, and hydraulic/capacity conformance for formal design and plan submittal.

## TABLE OF CONTENTS:

### Contents

EXECUTIVE SUMMARY .....	1
<u>1.</u> INTRODUCTION .....	1
1.1 OBJECTIVE: .....	1
1.2 LEGAL DESCRIPTION: .....	1
1.3 EXISTING AND PROPOSED SITE ZONING AND LAND USES: .....	1
1.4 SUMMARY OF PROPOSED DEVELOPMENT: .....	2
<u>2.</u> DESIGN DOCUMENTATION AND CRITERIA .....	2
2.1 DESIGN COMPLIANCE: .....	2
2.2 DESIGN DOCUMENTATION: .....	2
2.3 DESIGN CRITERIA: .....	2
<u>3.</u> SEWER DEMANDS .....	3
3.1 AVERAGE DAY AND MAXIMUM DAY DEMANDS: .....	3
<u>4.</u> EXISTING SEWER INFRASTRUCTURE .....	3
4.1 EXISTING SEWER SYSTEM: .....	3
4.2 FLOW MONITORING: .....	5
<u>5.</u> PROPOSED SEWER INFRASTRUCTURE .....	5
5.1 LINE EXTENSIONS: .....	5
5.2 SERVICES .....	6
5.3 PHASING: .....	6
5.4 MAINTENANCE RESPONSIBILITIES: .....	6
<u>6.</u> SEWER SYSTEM COMPUTATIONS .....	6
6.1 PROCEDURES, POLICIES AND METHODOLOGIES: .....	6
<u>7.</u> SUMMARY/CONCLUSIONS .....	6
7.1 SUMMARY OF PROPOSED SEWER IMPROVEMENTS: .....	6
7.2 PROJECT SCHEDULE: .....	6
<u>8.</u> APPENDICIES .....	7
I Preliminary Site Plan .....	7
II COS Q-S Map .....	7
III Sewer Flow Monitoring Results .....	7
IV Preliminary Utility Plan .....	7



## EXECUTIVE SUMMARY

Museum Square is a proposed mixed-use development located within the West Main Street area of Scottsdale generally lying south and west of East 1<sup>st</sup> Avenue and Marshall Way. The project includes:

- a high-rise hotel
- an apartment / condominium building
- three high-rise residential buildings
- related site amenities

## 1. INTRODUCTION

### 1.1 OBJECTIVE:

The purpose of this report is to provide an analysis of the impact to the existing sewer system and make recommendations for any necessary improvements.

### 1.2 LEGAL DESCRIPTION:

The improvement area lies within Sections 27 of Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona. The present Assessor's Parcel Numbers are as follows:

**Hotel:** North of 2<sup>nd</sup> Street and west of Marshall Way. Part of APNs 130-13-106, -108, and -109A

**Apartment / Condos:** North of 2<sup>nd</sup> Street east of Marshall Way. APNs 130-13 -164A, -165A, -166A, and -169B

**2<sup>nd</sup> Street ROW:** APNs 130-13-111 and -112 (from Goldwater Blvd to Marshall Way). Plus, 121A and 131A

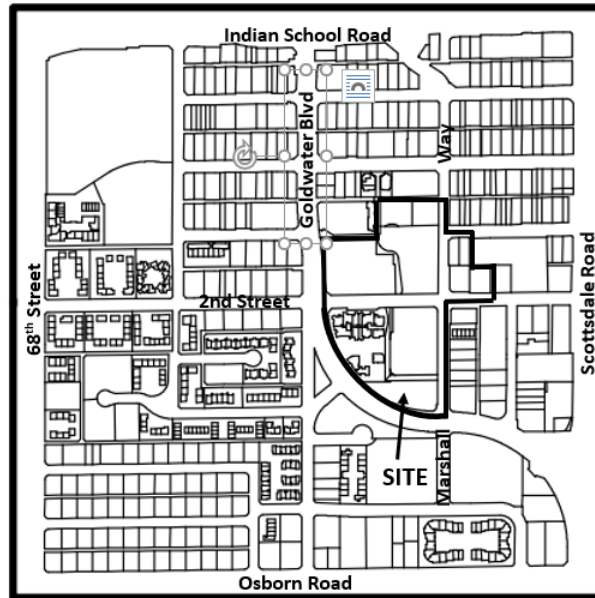
**Marshall Way ROW:** APNs 130-13-107 and -117 (from Goldwater Blvd to an alley south of E Main Street).

**Residential Buildings:** Courtyard at Main Street Plaza Scottsdale Condominium (MCR 973-06 and Loloma Partial Replat (MCR 823-22), and APN 130-12-172 an access drive.

### 1.3 EXISTING AND PROPOSED SITE ZONING AND LAND USES:

In 2003 Scottsdale City Council approved the Downtown Overlay to this general area. The original Loloma school site is zoned C-2 DO HP with the surrounding properties a mix of D/OC-2 PBD DO, D/DMU-2 PDB DO and D/OC-2 DO. The site presently supports the Loloma School, Museum of the West, The Stagebrush Theatre, the Loloma Transportation Center, and various parking areas. The transit center will be razed.

Proposed development will be a combination of a high-rise hotel, three residential buildings, and an apartment/condominium building along with the associated site amenities.



Vicinity Map

#### 1.4 SUMMARY OF PROPOSED DEVELOPMENT:

297 residential units within four buildings and a hotel with 190 rooms are proposed on what is presently vacant land. Reference **APPENDIX I** for a **Preliminary Site Plan**.

## 2. DESIGN DOCUMENTATION AND CRITERIA

### 2.1 DESIGN COMPLIANCE:

The sewer system will be evaluated and designed compliant with the City's 2012 Water Reuse Master Plan and 2018 Design Standards and Criteria Manual (DS+PM) along with requirements of Arizona Department of Environmental Quality ("ADEQ") and Maricopa County Environmental Services Department ("MCESD").

Not applicable, flow monitoring performed

### 2.2 DESIGN DOCUMENTATION:

City of Scottsdale Sewer Quarter-Section Map 16-44

Downtown water and sewer line as-built plans

OK, but field confirm for plan submittal, due diligence

### 2.3 DESIGN CRITERIA:

Domestic demands are from DS+PM Figure 7-1.2 Average Day Sewer Demand and referenced in **Table 1**.

**TABLE 1 - AVERAGE DAILY DEMANDS**

Land Use	Demand (gpd)	Units	Peaking Factors
High Density Condominium (condo)	140	per unit	4.5
Resort Hotel (includes site amenities)	380	per room	4.5
Restaurant	1.2	per sf	6
Commercial/ Retail	0.5	per sf	3
Commercial High Rise	0.5	per sf	3
Office	0.4	per sf	3
School: without cafeteria	30	per person	6

### 3. SEWER DEMANDS

#### 3.1 AVERAGE DAY AND MAXIMUM DAY DEMANDS:

The following chart represents the proposed flow from both Museum Square and the Canopy Hotel projects. It will be added to the monitored peak flow for basis of evaluating the sewer infrastructure.

Same flows updated here were used for the Canopy hotel case analysis.

**TABLE 2 - CALCULATED WASTEWATER DEMANDS**

Map Key	Use	Sq. Ft.	Units	Total Use (gpd)	ADD (gpm)	MDD (gpm)
4	Hotel		190	380	50.1	225.6
5	Residential	105,000	80	140	7.8	35.0
18	Hotel (by others)		176	380	46.4	209.0
N/A	School		50	30	1.0	6.3
Additional flow due to a pool backwash					100.0	100.0
New Demand North of 2nd Street					205.4	575.9
N/A	School		50	30	1.0	6.3
1	Residential	115,000	61	140	5.9	26.7
2	Residential	162,000	79	140	7.7	34.6
3	Residential	150,000	77	140	7.5	33.7
New Demand South of 2nd Street					22.1	101.2
Totals					227.5	677.1

309 gpm (100gpm Canopy pool backwash)

675.9

777.1  
+ 137gpm (exist. flows)  
-----  
908gpm

### 4. EXISTING SEWER INFRASTRUCTURE

#### 4.1 EXISTING SEWER SYSTEM:

Wastewater from this area generally flows to Marshall Way. An 8" pipe north of 2<sup>nd</sup> Street flows to a 12" pipe south of 2<sup>nd</sup> Street, then continues south to a 12" pipe in Osborn Road and east to the trunk sewer in Miller Road. The City's modeled system includes hydraulics on the existing Osborn

Road line. Therefore, analysis of sewer capacities in this report will be limited to the sewer north of Osborn Road. ✓

Existing manhole inverts and related pipe slopes were surveyed. This data is shown on the Preliminary Utility Plan. The segment of 8" pipe with the shallowest slope is just north of 2<sup>nd</sup> Street at 0.0059 ft/ft. The segment of 12" pipe with the shallowest slope is just south of 4<sup>th</sup> Street at 0.0048 ft/ft.

Refer to **APPENDIX II – COS QS Map 16-44** and the **APPENDIX IV - Preliminary Utility Plan** for reference.

**Table 3** and **Table 4** represent the existing pipe hydraulics of the two reaches described above.

TABLE 3 - Ex 8" Pipe at d/D = 0.65		
Inputs:		
Pipe Diameter, d <sub>o</sub>	8	in
Manning Roughness, n	0.0130	
Slope (ft/ft)	0.0059	slope
d/D	0.65	fraction
Results:		
Flow, Q	315.1	gal/min
Velocity, v	2.9	ft/s
Velocity head, hv	0.1328	ft
Flow Area, A	34.5867	in <sup>2</sup>
Wetted Perimeter, P	15.0039	in
Hydraulic Radius	2.3052	in
Top Width, T	7.6315	in
Froude Number, F	0.84	
Shear Stress (tractive force), τ	0.1596	psf

TABLE 5 - Ex 12" Pipe at d/D = 0.65		
Inputs:		
Pipe Diameter, d <sub>o</sub>	12	in
Manning Roughness, n	0.0130	
Slope (ft/ft)	0.0048	slope
d/D	0.65	fraction
Results:		
Flow, Q	838.0	gal/min
Velocity, v	3.5	ft/s
Velocity head, hv	0.1855	ft
Flow Area, A	77.8201	in <sup>2</sup>
Wetted Perimeter, P	22.5059	in
Hydraulic Radius	3.4578	in
Top Width, T	11.4473	in
Froude Number, F	0.81	
Shear Stress (tractive force), τ	0.1948	psf

#### 4.2 FLOW MONITORING:

A flow monitor was placed by RDH Environmental in the manhole just south of 2<sup>nd</sup> Street (Ex. MH#7) on April 27, 2018 and data was collected for 14 days. RDH used an AV Sensor with logger to monitor the flow in the 12" pipe system flowing straight through the manhole. Notes indicate the flow was steady and the system was clean. A plotted flow graph of the 12" sewer in **APPENDIX III – Flow Monitoring** indicates an average high flow of approximately 30 gpm with sixteen daily spikes between 35 and 136.8 gpm. The realty school was verified to be closed at the time of monitoring.

used peak in capacity calcs ✓

### 5. PROPOSED SEWER INFRASTRUCTURE

#### 5.1 LINE EXTENSIONS:

A previous report for Zoning Case 21-ZN-2017 noted the proposed peak flows for that development were less than the existing peak flows generated by the present use, therefore, no offsite sewer improvements were found to be necessary for that project. The maximum monitored flow noted above is well within the capacity of the existing system.

not all info was provided or analysis completed for Canopy rezoning case

North of 2<sup>nd</sup> Street – a hotel and residential building along with the Canopy Hotel are occurring over presently vacant land. The sewer system is being evaluated by adding the proposed peak flow to the monitored maximum flow and checking capacity of the existing 8" sewer segment with the shallowest slope. From **Table 2**, the total maximum flow north of 2<sup>nd</sup> Street is proposed to be 713.7 gpm (575.9 + 136.8 gpm). A parallel reach of 10" sewer is will be constructed north of the 2nd Street intersection with a slope similar to the existing 8" pipe. The two pipes will have a combined capacity of 886.4 gpm (315.1 + 571.3 gpm). It should be noted that four highest existing peak flows were recorded in the midnight to 2 am period potentially representing final cleanup activities in local restaurants. The average daily flow was on the order of 30 to 35 gpm and would represent the time period of the proposed maximum residential demands.

675.9gpm

813gpm



If a parallel sewer is not able to be constructed then upsizing of the existing sewer shall be required. Upsized sewer shall convey 813gpm/453gpm at max d/D=0.65. Given the slope of the existing 8" sewer this would be a 12-inch min sewer from 2nd Street north to Museum Square Hotel/condo tie-in to convey 813gpm, then a 10-inch min sewer north to alley north of 1st street to convey 453gpm.

TABLE 5 - New 10" Pipe at d/D = 0.65		
Inputs:		
Pipe Diameter, d <sub>o</sub>	10	in
Manning Roughness, n	0.0130	
Slope (ft/ft)	0.0059	slope
d/D	0.65	fraction
Results:		
Flow, Q	571.3	gal/min
Velocity, v	3.4	ft/s
Velocity head, hv	0.1788	ft
Flow Area, A	54.0418	in <sup>2</sup>
Wetted Perimeter, P	18.7549	in
Hydraulic Radius	2.8815	in
Top Width, T	9.5394	in
Froude Number, F	0.87	
Shear Stress (tractive force), τ	0.1995	psf

Note: new 8" sewer extending north from new 10" for Canopy would convey 309gpm  
Smin=0.59%, d/D=0.65, ok ✓

225.6+100+35  
+6.3+309=  
676gpm,  
Smin=0.59%,  
d/D=0.73,  
acceptable in  
the 10"  
dead-end  
extension ✓

South of 2<sup>nd</sup> Street - three residential buildings will be constructed over a common underground garage and operate as a single structure located on a single lot under management of a property agreement. Sewer service will be routed through a privately owned, operated and maintained sewer line from each high-rise down through the garage and over to Marshall Way. Total flow in the existing 12" pipe at the connection to Marshall Way will be 813.9 ((677.1 (from Table 2) + 136.38 (monitored peak)). Capacity of the 12" sewer at a d/D of 0.65 per Table 4 is 838.0 gpm. As previously stated, the offset time periods of the existing vs. proposed peak flows along with consideration of a 100 gpm pool backwash provide a further buffer in the daily operating capacity of the 12" sewer.

913gpm

S<sub>min</sub>=0.48%  
, d/D=0.69  
acceptable in  
the 12" given  
modest  
upstream  
basin size ✓

777gpm

for both hotels

## 5.2 SERVICES

All service laterals will be provided with cleanouts at the right-of-way per City requirements. Any proposed restaurant will need to provide an individual on-site grease interceptor.

## 5.3 PHASING:

The area will be developed in phases but it is anticipated the necessary building leads will be provided at the time of any public road improvements.

## 5.4 MAINTENANCE RESPONSIBILITIES:

No main extensions are proposed. Therefore, the existing public mains will continue to be owned, operated and maintained by the City.

# 6. SEWER SYSTEM COMPUTATIONS

## 6.1 PROCEDURES, POLICIES AND METHODOLOGIES:

Spreadsheets will be included in the final report detailing the flows and hydraulics of all pipes and laterals from the north end of this project down to the connection at Osborn Road. The City's sewer modeling output at Osborn Road will be requested for reference.

Separate discussion on this for Canopy Hotel. This may be applied to Museum Square as an in lieu payment or payback.

# 7. SUMMARY/CONCLUSIONS

## 7.1 SUMMARY OF PROPOSED SEWER IMPROVEMENTS:

One new reach of a parallel 10" public sewer main is proposed north of 2<sup>nd</sup> Street.

Sewer monitoring indicates the 12" line in Marshall Way south of 2<sup>nd</sup> Street is sufficient to serve this development.

## 7.2 PROJECT SCHEDULE:

Scottsdale board approvals are expected by Fall 2018. Final design reports and improvement plans will follow.

Yes, but 0.69 d/D is approaching upper reasonable limit

## **8. APPENDICIES**

- I Preliminary Site Plan
- II COS Q-S Map
- III Sewer Flow Monitoring Results
- IV Preliminary Utility Plan

# *APPENDIX I*

## *Preliminary Site Plan*

MAP KEY

- 1

RESIDENTIAL BUILDING #1  
- 11 STORIES  
- 135' HEIGHT
- 2

RESIDENTIAL BUILDING #2  
- 13 STORIES  
- 150' HEIGHT
- 3

RESIDENTIAL BUILDING #3  
- 13 STORIES  
- 150' HEIGHT
- 4

HOTEL - THE ARIZONAN  
- 13 STORIES  
- 150' HEIGHT  
- 190 KEYS
- 5

APARTMENT / CONDO BUILDING  
- TBD
- 6

SURFACE PARKING LOT  
- 120 SPACES
- 7

ADDITIONAL ON-STREET PARKING  
- UP TO 46 SPACES (W. of Marshall Way)
- 8

RESIDENTIAL PARCEL PURCHASE  
- 134,213 SQFT
- 9

NORTH / SOUTH DISTRICT PROMENADE
- 10

CONDOMINIUM PARKING TRAY  
- 376 SPACES
- 11

GARAGE PARKING ACCESS
- 12

PLAZA / DRIVE COURT
- 13

MUSEUM "BRIDGE" EXPANSION
- 14

POOL & TERRACE
- 15

OPEN SPACE / GARDENS
- 16

MUSEUM EXPANSION  
- 30,000 SQFT +/-
- 17

ADDITIONAL ON-STREET PARKING  
- UP TO 21 SPACES (north of 1st street)
- 18

PROPOSED HOTEL (HILTON CANOPY)  
- 66' HEIGHT  
- 185 KEYS
- 19

MULTI-USE PUBLIC SPACE  
- LAWN AREA, PATIOS, & TERRACES  
- PERFORMANCE SPACE  
- SPLASH PAD  
- SCULPTURE GARDEN
- 20

RECONFIGURED HOTEL PARCEL PURCHASE  
- (47,343 SQFT)
- 21

ADDITIONAL ON STREET PARKING  
- UP TO 28 SPACES (south of 1st street)
- 22

PEDESTRIAN CONNECTION
- 23

ADDITIONAL ON-STREET PARKING  
- UP TO 37 SPACES (East of Marshall Way)
- 24

HOTEL PARKING TRAY  
- UPPER LEVEL (84 SPACES)  
- LOWER LEVEL (84 SPACES)
- 25

COVERED PROMENADE
- 26

RECONFIGURED ENTRY DRIVE  
(SHARED ACCESS / EGRESS)
- 27

ADDITIONAL ON-STREET PARKING  
- UP TO 37 SPACES (South of 2nd Street)
- 28

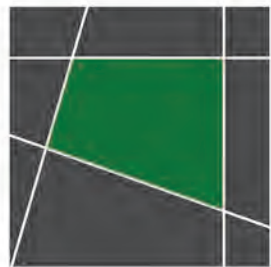
MAIN ART SCHOOL SHARED  
DRIVE ENTRY
- 29

HOTEL GARAGE PARKING ACCESS
- 30

THE GOLDWATER (CONDOMINIUMS)
- 31

NEW SIGNALIZED CROSSWALK
- 32

NEW SIGNALIZED MID-BLOCK  
CROSSWALK (HAWK)



# *APPENDIX II*

## *COS Q-S Map*



**GENERAL NOTES:**

- THIS IS A COMPUTER GENERATED DRAWING. FOR ANY REVISIONS PLEASE CONTACT THE CITY OF SCOTTSDALE GIS DEPARTMENT AT (480) 312-7762.
- THE SECTION LINE BEARING AND DISTANCES ARE BASED ON THE CITY OF SCOTTSDALE GPS SURVEY OF SEPTEMBER 1991. BEARINGS ARE IN DD AND DISTANCES ARE IN FEET TO TWO DECIMAL PLACES. WHERE NO CORNER WAS FOUND THE DIMENSIONS ARE GIVEN TO CALCULATED SECTION CORNERS AND ARE NOTED AS CALCULATED ON THE MAP.

**LEGEND:**

- Cleanout
- Lift Station
- Manhole
- Non-GPS Point
- Plug
- Sewer Service Point
- Sewer Tap Point
- Sewer Valve
- Treatment Plant
- Sewer Main - Gravity
- Sewer Main - Force
- Sewer Main - Private

**VICINITY MAP**

**SCALE: 1" = 100'**

**SEWER QUARTER SECTION MAP 16-44**

NE 1/4 SEC. 27 T2N R4E

**SCOTTSDALE GEOGRAPHIC INFORMATION SYSTEMS**

3629 North Drinkwater Boulevard  
Scottsdale, Arizona 85251

THIS DOCUMENT IS PROVIDED FOR GENERAL INFORMATION PURPOSES ONLY. THE CITY OF SCOTTSDALE DOES NOT WARRANT ITS ACCURACY, COMPLETENESS OR SUITABILITY FOR ANY PARTICULAR PURPOSE. IT SHOULD NOT BE RELIED UPON WITHOUT FIELD VERIFICATION.

**THE CITY OF SCOTTSDALE**

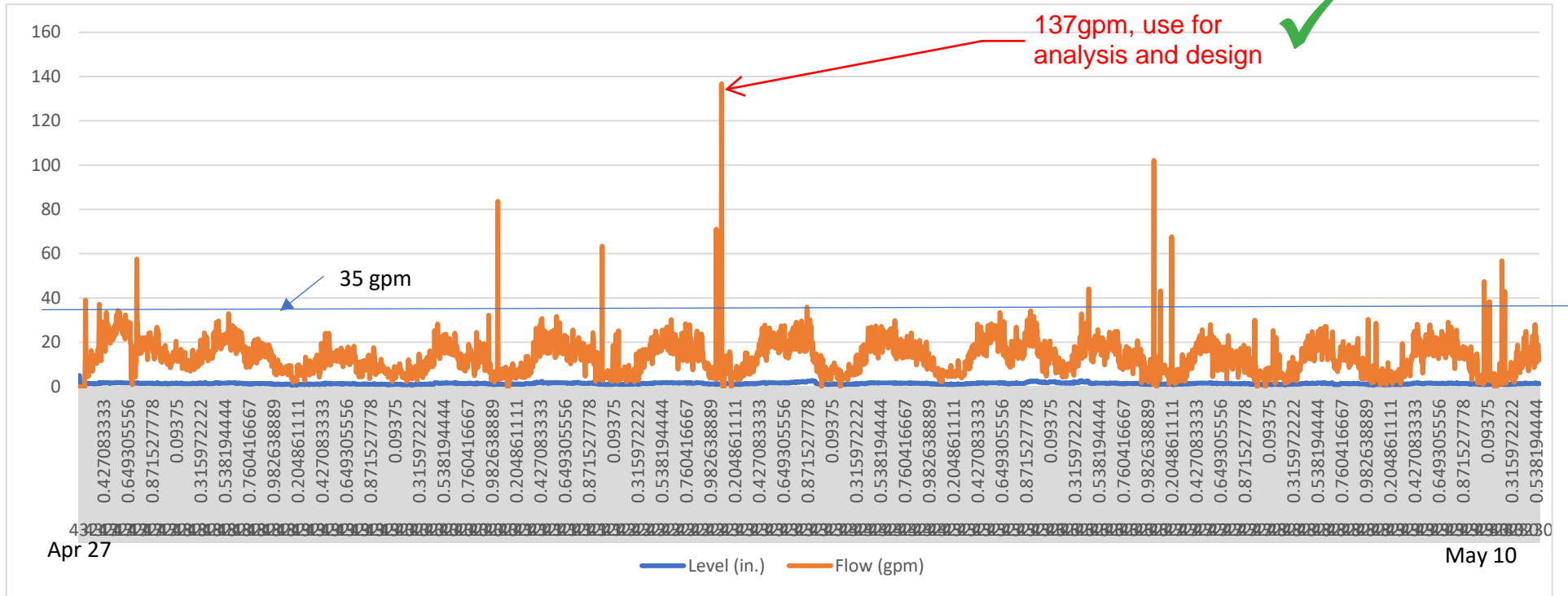
25-JUN-17

## *APPENDIX III*

### *Sewer Flow Monitoring Results*

### APPENDIX III - MONITORED FLOW DATA (gpm)

In manhole on 12"  
Marshall line south of  
2nd Street



### APPENDIX III

#### Recorded Flows Above 35 gpm

Date	Time	Level (in.)	Flow (gpm)
3-May-18	2:05	1.643	136.766
7-May-18	1:05	1.484	102.221
1-May-18	0:55	1.462	83.724
3-May-18	0:55	1.33	71.094
7-May-18	5:00	1.352	67.727
1-May-18	23:50	1.372	63.433
27-Apr-18	17:35	1.721	57.539
10-May-18	5:35	1.32	56.858

Date	Time	Level (in.)	Flow (gpm)
10-May-18	1:40	1.199	47.416
6-May-18	10:45	2.187	44.143
7-May-18	2:30	1.197	43.257
10-May-18	6:10	1.214	42.955
27-Apr-18	6:20	1.544	39.167
10-May-18	2:50	1.307	38.379
27-Apr-18	9:20	1.907	37.216
3-May-18	20:50	2.501	35.929

# *APPENDIX IV*

## *Preliminary Utility Plan*



## COMMENT TRACKING LOG

CLIENT:	MacDonald Development	DATE:	9/11/2018
PROJECT:	Museum Square	REFERENCE:	Rezoning 2nd Comments

No.	Sheet No.	Reviewer	COMMENT	Responsible Party	RESPONSE
The following comments are from: City Of Scottsdale				Scottsdale Water: Levi Dillon	
1	Pg. 1	LD	Address comments on following page and throughout document.	SEG	Noted
2	Pg. 2	LD	1.) New 8" sewer extended north of 2nd Street. However, report text states it will be extended to new hotel. Utility plan only shows it extended to Building 5 (condo). It is expected and required that this new 8" sewer be extended all the way north to the new hotel as stated in the report. LDillon 9/7/18	SEG	It does go to Hotel service. The theater service from the west has been rerouted to go around the new hotel and has been separated from the hotel service.
3	Pg. 2	LD	2.) DS&PM 7-1.409. 2 cleanouts need to be added to each sewer service lines per MAG detail 440-3. LDillon 9/7/18	SEG	Added keynote 15 for MAG detail 440-2 (double CO)
4	Pg. 2	LD	3.) Refer to IPC 2015: utility plan needs to be modified to remove building sewer lines servicing multiple buildings from being routed underneath separate buildings. Multiple buildings may not share in the sewer system, public or private, that goes underneath other buildings. Update design and utility site plan included within BOD accordingly. LDillon 9/7/18"	SEG	Refer to Section 5.1 for clarification. Buildings are considered a single structure.

5	Pg. 2	LD	4.) Sewer flow calculation in Table 2 states a negative flow of -41gpm (250 credit applied to 209) coming from map key area number 18. This is not possible unless the previous flow from this area was 459gpm and the revised flow for a development by others will be 209gpm. 209gpm should be used and the -250 gpm credit removed from the table. This will add 250gpm to the Table 2 totals. This will bring the existing sewer d/D up to max of 0.65 and require the new 8" sewer to be extended to accept the sewer from the new hotel. This will also result in the 12" sewer to slightly exceed 0.65 d/D (by the existing flow). Please further address the 12" flows in a subsequent ZN case BOD. LDillon 9/10/18	SEG	Calculations are updated
6	Pg. 2	LD	5.) Sewer outlet onto Marshall Way for building 1,2, and 3 is not clearly shown. Why is it shown with a sewer plug? Building leads for road work? LDillon 9/7/18	SEG	Added keynote 15 for MAG detail 440-2 (double CO); all services are plugged / capped until building construction connects.
7	Pg. 2	LD	6.) The utility plan provided shows the existing Marshall Way sewer south of 2nd street as 8". It should be shown as 12" south of 2nd Street as stated in the report (unless verified otherwise by the Engineer). LDillon 9/7/18	SEG	Revised to 12"

8	Pg. 6	LD	<p>Refer to comment #4 on 2nd page: You are suggesting the future hotel and all upstream contributions will only amount to a peak of 95gpm....not valid!Canopy by Hilton in</p> <p>22-DR-2018 SEG report suggests either a future max incoming basin flow of 394,000gpd (Table 3) or 693,000gpd (Figure 6), 273gpm or 481gpm, respectively. It is unclear in the SEG report where Fig.6 693,000gpd originates.</p> <p>Per SEG report 300,000gpd was to come from Canopy hotel versus 360,000gpd from AZ School of Real Estate and Business. As SEG projected, 79% (250gpm) of the existing total flow of 453,000gpd (314gpm) is from existing school flow, the flow monitoring data is therefore very sensitive to activities at the school.</p> <p>Given the large discrepancy of the peak flow monitoring value (136gpm) versus projected current peak flow (314gpm), and the inconsistency in the data it is unlikely the school flow was accurately captured, or captured at all, with flow monitoring.</p>	SEG	Calculations are updated
9	Pg. 6	LD	<p>In Table 2: --</p> <p>Remove 250gpm credit.</p> <p>---Add line item for existing flow amount of at least 64gpm (273-209), and at most 136gpm or more (if school not captured in flow monitoring or data is invalid)</p>	SEG	Calculations are updated. School reference is removed (building is vacant - not in operation during monitoring)

10	Pg. 6	LD	MDD 325.9 (gpm) change to 576-648gpm	SEG	Calculations updated
11	Pg. 6	LD	MDD 427.1 (gpm) change to 677-749gpm	SEG	Calculations updated
12	Pg. 6	LD	0.0059: Where did the revised inverts for 8" pipe come from to determine this slope? See note on utility plan.	SEG	Existing pipe data is confirmed by field survey
13	Pg. 7	LD	2.7 depth: Higher depths shown, why don't these correspond to higher flows? Is there averaging occurring? Want peak instantaneous minute flows not averages	SEG	Refer to revised monitoring data in Appendix III
14	Pg. 8	LD	Pool backwash: 576 to 648gpm, see section 3 notes. Proposed dual 8" should still work as long as all new hotel and condo flows go to new 8" sewer line.	SEG	Calculations updated
15	Pg. 8	LD	Tabel 4: 677 to 749gpm, see section 3 notes.	SEG	Calculations updated
16	Pg. 8	LD	Tabel 4 is 673.4 : Exceeding capacity slightly, in at least 1 pipe section	SEG	Calulations updated based on verified pipe data
17	Pg. 8	LD	(136.8 gpm + 427.1 gpm) : Refer to comments on flow monitoring data in appendix, could not make sense of data, no pattern...appears random. Was AZ real estate school in session?	SEG	Refer to revised monitoring data in Appendix III
18	Pg. 15	LD	Dates: Duration stated in report is 7 days.	SEG	Report corrected to 14 days
19	Pg. 15	LD	Dates: Was AZ real estate school in session?	SEG	No
20	Pg. 15	LD	Max Time: no consistent maximum, repeating diurnal pattern, random time and flow data	SEG	Refer to revised monitoring data in Appendix III

21	Pg. 15	LD	Maximum (in) 4.997: Depth of flow max here, where is corresponding max gpm value?	SEG	Refer to revised monitoring data in Appendix III
22	Pg. 15	LD	Maximum (in) 2.627 and Average (in) 1.677: Higher depths shown outside of May 3rd, why don't these correspond to higher flows? Is there averaging occurring? Want peak instantaneous minute flows not averages	SEG	Refer to revised monitoring data in Appendix III
23	Pg. 15	LD	DATA DOES NOT MAKE SENSE, NO INTERPRETATION OR EXPLANATION PROVIDED.	SEG	Refer to revised monitoring data in Appendix III
24	Pg. 17	LD	Extension of sewer appears to partially serve hotel	SEG	Theater and Hotel services are separated
25	Pg. 17	LD	Should be 12-inch sewer south of 2nd Street?? See note #6.	SEG	Revised to 12"
26	Pg. 17	LD	Shared building sewers under other buildings. Refer to note #3 in comments	SEG	Refer to Section 5.1 for clarification. Buildings are considered a single structure.
27	Pg. 17	LD	New 8" sewer extent only shown to condo, should extend to all points where hotel flows enter i.e. MH#4. Refer to note #1 in comments	SEG	New tie-in for Hotel is at proposed MH
28	Pg. 17	LD	Sewer connection and cleanout. Refer to note #2 and #5 in comments	SEG	Added key note 15
29	Pg. 17	LD	These elevations deviate from City GIS, what is the source of this information??	SEG	Verified by field survey

30	Pg. 17	LD	Existing/Relevant GIS/quarter section invert data: MH#4 1248.29 MH#5 1247.95 Slope 4 to 5: $0.34/66=0.00515\text{ft/ft}$ (SEG has +0.00712) MH#6 1248.16 Slope 5 to 6: $-0.21/150=-0.0014\text{ft/ft}$ ** (SEG has +0.0058) **Slope is negative!!! Line slopes back to upstream manhole. Verify with invert survey data.	SEG	Pipe data was verified by field survey
31	Pg. 17	LD	Utility plan not reviewed for water infrastructure. Assumed no changes since 1st round "accepted as noted version".	SEG	Noted